

Appl. No.: 10/797,296
Docket No.: 351913-992471
Response to Office Action of September 19, 2006

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REMARKS/ARGUMENTS

Claims 1-20 are pending. Claims 1-20 have been rejected. Applicants respectfully traverse the Examiner's rejections.

I. Claims 1-20 were rejected under 35 U.S.C 102(e) as being anticipated by U.S. Pat. No. 6,952,034 to Hu, et al. For the reasons set forth below, Applicants respectfully traverse this rejection.

Before reviewing the rejection it would be useful to review the invention as claimed as set forth in claims 1-20. In claims 1-5 a non-volatile memory cell is claimed; claims 6-11 claim an array of such non-volatile memory cells; with claims 12-16 claiming a method of manufacturing such an array and with claims 17-20 claiming a method of manufacturing the cell.

The non-volatile memory cell has a trench area and a planar surface area, with a first region in the planar area, and a second region in the bottom of the trench. A channel region connects the first region to the second region and has two portions: a first portion that is along the planar surface area adjacent to the first region, and a second portion which is along the sidewall of the trench. A dielectric covers the channel region. A floating gate is on the dielectric and is spaced apart from the second portion of the channel region. A first gate is on the dielectric and is spaced apart from the first portion of the channel region. A second gate is in the trench and is capacitively coupled to the floating gate (meaning it is separated from the floating gate) and is capacitively coupled to the second region (meaning it is also separated from the second region). In independent claim 6, the language of "capacitively coupled to ...said second region" is also used. In independent claim 12, the language of "insulated from said first region" is used. Finally, in independent claim 17, the language of "insulated from said first region" is again used. Thus, as can be seen, in all of the claims, the gate that is in the trench is insulated from (or capacitively coupled to) the floating gate and is also insulated from (or capacitively coupled to) the region at the bottom wall of the trench. Because the gate is not connected to the region at the bottom of the trench, the voltage applied to this gate can be independent of the voltage to the region at the bottom of the trench.

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Turning to the reference Hu, it is readily seen that gate 54 is connected to region 52 (see Fig. 2Q; see also col. 7, lines 25-40.) Thus, in Hu, the gate 54 in the trench is not insulated from the region 52 or capacitively coupled to region 52 as required by claims 1-20 of the instant application. Thus, for at least this reason alone, the rejection of claims 1-20 based upon Hu is in error.

For the foregoing reasons, it is respectfully submitted that the claims are in an allowable form, and action to that end is respectfully requested.

The Examiner is invited to call Applicants' attorney at the number below in order to expedite prosecution of this application.

The Commissioner is authorized to charge any deficiencies in fees and credit any overpayment of fees to **Deposit Account No. 07-1896** and reference Attorney Docket **No. 351913-992471**.

Respectfully submitted,

DLA PIPER RUDNICK GRAY CARY US LLP

Dated: December 18, 2006 By: Ronald L. Yin
Ronald L. Yin
Reg. No. 27,607

Attorneys for Applicant(s)

Ronald L. Yin
DLA Piper Rudnick Gray Cary US LLP
2000 University Avenue
East Palo Alto, CA 94303-2248
650-833-2437 (Direct)
650-833-2000 (Main)
650-833-2001 (Facsimile)
ronald.yin@dlapiper.com